FILE 047/001

TOSCO CORPORATION
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July 1, 1982

CORPORATE OFFICES
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LOS ANGELES, CALIFORNIA 90067
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RECEIVED
JUL 01 1982
DIVISION OF
OIL, GAS & MINING

Mr. James W. Smith, Jr.
Coordinator of Mined Land Development
State of Utah Natural Resources & Energy
Division of Oil, Gas, and Mining
4241 State Office Building
Salt Lake City, Utah 84114

Reference: ACT/047/001

Dear Jim:

Attached please find Tosco Corporation's combined responses to requests for additional information contained in the Division's requests of 7 April and 8 June 1982 and to meetings between Tosco and Division personnel on 7 June, 25 June, and 1 July 1982. This attachment and this letter supersede our letters of 21 May and 17 June in that they combine our two previous responses as requested by the Division. To facilitate future reference, we are also attaching copies of the Division's letter requests, annotated with the reference numbers.

As stated in previous correspondence, this letter and the Attachments should be included as part of our application of 29 December 1981. One of the responses involves a change in a number in the text (the minimum soil depth). A substitute page with that change has been provided (page 66 of Application).

We will be working with your staff over the next two weeks to identify an appropriate level of bonding. Again, Tosco appreciates your, and your staff's, assistance. Sally Kefer and those assisting her with the review have been very helpful.

Sincerely,

John E. Hardaway
Manager Regulatory Affairs

JEH:jc

Attachments: A/S

cc: Sally Kefer (w/Attachment)

Response to State of Utah Requests for additional information of 7 April 1982 and 8 June 1982, and meetings between the DOGM and Tosco held on 7 June 1982, 25 June 1982, and 1 July 1982. Supplements Tosco's Notice of Intention to Mine and Reclamation Plan dated 29 December 1982. Response numbers are in order of appearance in State request of 7 April 1982.

1. The pipeline route, to be determined by the gas supplier, will be provided to the Division when it has been identified. The gas suppliers will be responsible for obtaining necessary approvals (page 46 of Application).

2. Oil shale mining, to be conducted at a depth of about 2000 feet, will not affect gilsonite mining since that mining is conducted at shallower depths. No gilsonite veins are known to exist in the mine facilities area. No mining of gilsonite is taking place on the Tosco lease areas included in this Notice. No surface facilities are proposed over gilsonite deposits.

3. Water quality data for the Birds' Nest aquifer indicate a wide range of concentrations. The data collection and analysis is continuing and the results of the analysis will be made available as they are verified. The zone which may contain this water will not be encountered until about 18 months after construction on the shaft begins and about 22 months after grading begins.

4. The reseeding or planting of disturbed areas will be based on site-specific designs. The entire 39.1 acre site may not be disturbed and thus some areas within the site may not require reclamation. Tosco agrees to provide a specific vegetation success standard for disturbed areas that will be seeded and to do so prior to any land disturbance covered by its application dated 29 December 1981. The general area(s) to be seeded will be shown on a map submitted to the Division of Oil, Gas, and Mining. If different revegetation standards for different disturbed areas are proposed, these will be described in the submission and the areas shown on the map. Where poor soils or areas of essentially no soils or vegetation are encountered, the disturbed surface will be made suitable for invasion of native species after operations are terminated. The specific reclamation treatments proposed

for different areas will be described in the submission if they differ from the original application dated 29 December 1981.

Representative site-specific vegetation data, collected during the appropriate growing season, will be collected and provided to the Division of Oil, Gas, and Mining to support selection of the quantitative revegetation standard(s). The locations from which data were collected will be identified in a manner facilitating correlation with soils (range sites).

5a. Clay materials may have to be imported to provide the liner. However, core holes show that impermeable clay materials exist on site. The bedrock under the ponds consists of hard, well-cemented claystone. In-place permeability test conducted within this material gave permeabilities of $2 \times 10^{-5}$ to less than $1 \times 10^{-7}$ cm/sec. Tosco has also identified a borrow area for this type of impermeable material within the mine site. The same type of testing conducted on freshly-exposed claystone which could be used for embankment construction indicated permeabilities of $1 \times 10^{-8}$ cm/sec. It should be kept in mind that the liner may not be needed if water quality is acceptable.

5b. The channels are designed to safely pass flows with a velocity of 2.5 fps. No need for special velocity control measures is anticipated.

5c. The narrative is essentially correct. The sediment pond will be oversized and no discharge will occur from events less than the 10-year, 24-hour event.

5d. If reinjection becomes necessary, adequate water quality must be maintained to maintain an acceptable reinjection rate. Of principle concern would be suspended sediment and materials that may create a build up over the well screen. The quantity of muck drainage water is expected to be small compared to potential mine water inflow and is not expected to adversely affect the mine water. But, if an adverse effect on suspended sediment content is projected and since the quantity is small, the muck drainage can be kept separate. Until the need exists to obtain authorization to reinject or otherwise discharge the water (which may occur 22 months after site grading) there is no need to separate the streams. Drainage from the coarse ore, caused by precipitation and therefore also a small amount, is not expected to affect the quality of water in the pond. The ore stored in the coarse ore stockpile is run-of-the-mine

material with a nominal maximum size of 12 inches. Oil shale is not readily weathered. Thus little, if any, suspended solids or biological contaminants are expected. Detention time is expected to be more than adequate to settle solids. Other techniques to reduce solids are available, if required. Though it is likely obvious, we point out that the quality of the ground water, in terms of dissolved components, is poor.

6a. With respect to berming of the soil stockpile, Tosco understands and commits to the use of berms or other additional erosion controls if abnormal and adverse erosion of the stockpile occurs despite the temporary revegetation measures. Prior to temporary revegetation of the soil stockpile, the piles will be stabilized using those measures necessary to minimize erosion which are also commensurate with establishing vegetation. Prior to seeding, the topsoil stockpile will be stabilized through compaction with hauling equipment. The exposed surface will then be cultivated, broadcast seeded, raked, and mulched. Irrigation could be employed to supplement precipitation during the first year. (See Section 5.3.1 of 29 December 1981 application.) Tosco agrees that restriction of soil losses is the objective. The need for additional erosion control measures may be determined by Tosco or by the DOGM if non-compliance with applicable Rules exists.

Since the soil stockpile will be stabilized, since the soils are relatively coarse, and since precipitation is quite low, the probability of erosion from the stockpile is low. Tosco recognizes that if soil material is added to the stockpile at a later date, the pile will be disturbed and will again be subject to more erosion. Tosco will develop a separate soil stockpile for soils removed at a later date if necessary to limit erosion and protect the soils.

6b. The material which accumulates in the sedimentation pond will be tested in accordance with applicable soil-type analyses to assess use as soil during reclamation. The material should not be contaminated with oil and grease since such contaminants are not to be disposed of in the drainage area. In the unlikely event of contamination, the contaminated materials may be buried or disposed of in an approved solid waste disposal facility located off-site.

7. The total area subject to disturbance, and which is drained either to the sediment pond or to the mine water retention pond, is 39.1 acres. The bond was calculated, conservatively, to cover 40 acres of disturbance. But not all of the 39.1 acre site will be disturbed by grading or other

operations. And some of the area may be disturbed only by construction activities and thus may be reclaimed shortly after disturbance rather than at the cessation of operations. Since it is impossible to specify which areas within the mine site will not be disturbed, we have choosen to cover disturbance within the entire area in the application. The 29 December 1981 application commits Tosco to confining disturbance to the designated site area, unless an amendment is filed with and approved by the DOGM.

The soils material balance depends on variables that will be defined prior to site disturbance and then refined during initial on-site soil removal operations. The total area of EkD, CaC, and AkC soils that are proposed to be removed is estimated to be on the order of 16 acres (p. 20 of 29 December 1981 application). The soil depth in this area is expected to range from 0 to 20 inches. Based on these estimates, derived from Soil Conservation Service data and Tosco's field investigations, there would be about 28,000 cubic yards of suitable soil available for removal. These calculations are not reduced for the typical inclusions of thin soils within the designated soil types. A more precise analysis of the volume of soils will be calculated from additional soil depth data collected by Tosco. These data will be provided to the DOGM prior to initiating construction activities on the site. The specific soil or range site types proposed to be removed will be shown on a map. Any additional soils or earth materials suitable for conservation and use in reclamation will be analyzed to determine the suitability for stockpiling with the other soils, and the need to stockpile separately. The soil analyses will be physical, chemical, or both and will be submitted to the DOGM.

Soils will be replaced, in general, in areas from which they were removed. The EkD, CaC, and AkC types will be mixed. Some of the suitable soil materials are scheduled for distribution over the coarse ore pile to help create a suitable seedbed for vegetation. In item 42 of the Mined Land Reclamation checklist, it was estimated that the replacement depth "may average about 6 inches, but will be determined by the availability of soils suitable for supporting plant growth and stabilizing the surface". Tosco commits to replacing soils in those areas where (1) those soils existed prior to disturbance and (2) where reclamation will be enhanced by replacement. The proposed areas of soil redistribution, and the materials to be redistributed, will be provided to the DOGM when the actual quantities and types of materials have been determined.

8. The North Wash baseline data collection station is located on North Wash, about 2 miles upstream of its mouth. This station is Station 09306880 of the USGS data collection system. Tosco collects the data. Its location is shown in Figures 2.5-1 and 2.5-2.

9a. Suitable soils encountered along new road rights-of-way will first be used to help stabilize embankments by providing a suitable plant growth medium. If excess soil is encountered and if the material will enhance revegetation, Tosco agrees to transport the excess material to an appropriate topsoil stockpile for later use at the mine site. Tosco intends to conduct representative analyses of such soils to identify the utility of saving them. Data collected will be provided to the DOGM for review.

9b. The soils of the Sand Wash site are typically of relatively poor quality when compared to many other locales. The suitability of soils local to Sand Wash to enhance land stability and postmining uses is a site specific determination. Soil suitability at Sand Wash is more a function of soil thickness than chemical factors. The CaC soil was successfully used at the Tosco revegetation test site in 1976 and no problems with the soil or subsoil are anticipated. The value of 15 is given in the 29 December 1981 application for the CaC soil is "exchangeable sodium percentage (ESP)." A copy of the Soil Conservation Service soil survey reports containing this and other Sand Wash data have been sent to the DOGM.

Soil removal and stockpiling operations will be properly supervised by a qualified professional to ensure protection of suitable plant growth material. The qualified professional will be trained to make site specific determinations as to which soil materials will be removed and stockpiled based on visual assessments of the physical and chemical characteristics of the soil materials. The soils or soil associations to be removed will be mapped and staked prior to removal. The professional will have undergone training in field identification of soil horizons such that established soil quality criteria can be properly applied. The professional may be, or will have been trained by, a professional soil scientist and agronomist.

9c. It is unlikely that sufficient soil exists in the area of the coarse ore stockpile to require removal. This area is located in the extreme upper headwaters of North Wash. If removal of soil is justified, removal will preceed disturbance. If the sequence of disturbance requires removal after initial stabilization of the soil stockpile, the stockpile will be restabilized.

9d. The soil stockpile will be stabilized in a manner that minimizes loss of suitable soil. If excessive erosion occurs before the pile is adequately stabilized, "temporary" methods will be used where effective. The stabilization procedures are discussed in response 6a.

9e. The Soil Conservation Service reports suggest that the AkC and EkD complexes are 20 and 12 inches in average thickness of viable material. The Project is designed to remove the maximum amount of suitable material necessary and effective for reclamation. Section 5.3.1 should read 0 to 20" (page 66).

10. Grubbed vegetation will be removed with suitable soils, bladed into fills where fill stability is not imparied, or may be windrowed to help control erosion. There is very little vegetation in the mine shaft area.

11. The sedimentary materials to be encountered in the shaft belong to the Uinta and Upper Green River Formations. Thus shales, sandstones, siltstones and marlstones are the predominant materials. The Uinta Formation will be the same as the surface rocks at the site. The Green River Formation will be the same as in surface exposures along Willow Creek, a few miles southwest of the Project site.

There is no evidence of toxic materials, especially with regard to sodium or other salts, at the Sand Wash site. Tosco agrees to arrange the collection of an appropriate number of samples of the rock material encountered during shaft construction, to have the samples analyzed for pH and electrical conductivity, and to report the results to the DOGM. If toxic materials or other revegetation problems are suggested, additional testing may be required by the DOGM.

The number of ten samples will be used for planning purposes. The actual number of samples will be determined by the representativeness of analyses of exposed strata.

12a. Item #3 on page 3 of Form MR 2 lists the important species to be considered first in the reclamation program. These are all but two species listed in Table 5.3-1. The other species (needle and thread and intermediate wheat grasses) will continue to be evaluated and will be used if suitable and available from the proper sources.

12b. The mulching rate is expected to be about 2000# per acre. The rate shown on Item 2 on page 3 of Form MR2 should be changed to "about 2000 lbs". The need for site-specific determinations of mulching roles is noted on page 15, item 47, of the check list. Soil tests would be conducted to

determine the need for amendments prior to final reclamation or revegetation. The possible, temporary requirement for available nitrogen to replace that used in decay of organics is recognized. The hydroseeding rate is given as 30 pounds (pure live seed) per acre.

12c. Tosco proposes to stabilize the coarse ore stockpile (page 64 of 29 December 1981 application). Tosco also intends to proceed into additional phases of the Project leading to full scale pyrolysis and upgrading facilities. Plans for full scale operations will be submitted for State review and approval. Thus the coarse shale ore is ultimately to be processed and it should likely not be necessary to reclaim the stockpile itself. However, Tosco is committed to reclaim the coarse ore stockpile as proposed.

The coarse ore is benign material as is marlstone in outcrops. The particle size distribution for this run-of-mine material is expected to be relatively suitable for vegetation growth.

Tosco intends to stage reclamation of the coarse ore stockpile such that a portion of the pile will be available for revegetation prior to other portions and thus prior to termination of the Development Shaft and Mine Program. The revegetation procedures are specified on page 70 of the 29 December 1981 application. This staging will allow acquisition of data regarding the potential success of revegetation of the shale ore. If these revegetation "plots" demonstrate that the ore cannot be revegetated, the data will be submitted to the DOGM pursuant to Rule M-10(12)(3) in support of a request for an exemption to reclaim the coarse ore stockpile.

13. In our forwarding letter to the Division, we indicated that we would like to discuss annual phasing of the bond, if this approach is acceptable. The reclamation will follow cessation of operations in mid-1987 (pp 3,29, Fig 3.1-2). Grading will be conducted whenever temperature and moisture conditions are suitable. The necessary revegetation procedures would be conducted at the first seasonal opportunity. The preferred planting season would be the Fall. However, the planting would be in the Spring if lands are graded and prepared after a Fall planting time. No summer planting is envisioned because of historical lack of access.

14. No drill holes are proposed as part of this plan. Monitoring stations are covered under a previous exploration Notice.

15. The coarse ore stockpile will be appropriately graded and prepared as necessary to maintain appropriate stability. Section 5.3 discusses surface preparation of all disturbed areas and does not distinguish between the coarse ore stockpile and the other disturbed areas. On page 70 the coarse ore stockpile is more specifically addressed.

16. The maximum depth of the fill at the surface facilities will be about 22 feet. The fill will be stabilized to ensure support of the mine facilities. The exposed sides of the fill will be graded to 4(h):(v). Natural topographic grades in the areas of fill are quite low. Long-term geotechnical stability is assured. Long-term erosional stability will be properly controlled with low slopes, vegetation where suitable, and talus material.

## 5.3 Revegetation

### 5.3.1 Soil Stockpiling

Friable surface materials (including available A and B horizons and unconsolidated subsoils) will be scraped from the project site prior to construction and stockpiled. These soils are expected to vary in depth from 0-20". Based upon the surveys conducted (Section 3), it is not anticipated that any toxic materials or other materials unsuitable for reclamation activities will be encountered.

The stockpiled surface will be temporarily stabilized and protected from wind erosion and water erosion by seeding with suitable grass species. Suitable species include Indian ricegrass (Oryzopsis hymenoides), galleta grass (Hilaria jasmesii), and Needle and thread grass (Stipa comata), all of which are native to the Sand Wash site. The above species will provide adequate cover and protection from erosion over the short time period the stockpile is in place.

### 5.3.2 Surface Preparation

Once the project site has been decommissioned and shaped, previously stockpiled topsoil materials will be spread over the surface. Although it is estimated that nitrogen and

STATE OF UTAH
NATURAL RESOURCES & ENERGY
Oil, Gas & Mining

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Cleon B. Feight, Division Director

April 7, 1982

Mr. John E. Hardaway
Tosco Development Corporation
1600 Broadway, Suite 1400
Denver, Colorado 80202

RE: Review of Sand Wash
Development Mine Project
ACT/047/001
Uintah County, Utah

Dear John:

The Division of Oil, Gas and Mining has completed a review of the Tosco Sand Wash Development Shaft and Mine Project. There were a number of areas identified which need further clarification before completing the permit for this project. Please find enclosed is a list describing these concerns.

The Division of State History submitted the enclosed comments in February 1982. We are forwarding them for your information.

It is our intent to resolve as many of these concerns as possible prior to issuing a tentative approval notice.

If you have any questions about these comments or if you would care to discuss them further, either prior to or with Tosco's written response, please contact Sally Kefer of my staff.

Sincerely,

JAMES W. SMITH, JR.
COORDINATOR OF MINED
LAND DEVELOPMENT

Enclosure

cc: John Blake, State Lands

JWS/SK:btb

cc to C. Timm

Board/Charles R. Henderson, Chairman • John L. Bell • E. Steele McIntyre • Edward T. Beck
Robert R. Norman • Margaret R. Bird • Herm Olsen

TOSCO PERMIT REVIEW

1 M-3(1)(b)

The route of the proposed Mountain Fuel pipeline should be submitted to the Division when finalized.

2 M-3(2)(a)

Tosco should provide a narrative on how the mining of oil shale will affect the recovery of gilsonite which exists on the property.

3 M-3(1)(d)

The Division requests that a copy of the water quality data for the sample from the Upper Bird's Nest Aquifer be submitted as soon as available (page 29, Permit Application). p3 p29

4 M-3(2)

The applicant gave a wide range as the percent cover for vegetation. The applicant should chose a specific standard for revegetation success which should be chosen and justified by data collected on site. Will the entire area be reseeded in the same manner? There are three different habitat types in the area. Will areas currently labeled nonvegetated be reclaimed?

5 M-10

a The soil for the water retention pond embankment and that to be utilized as floor "liner" material is identified as impermeable. From where will this material be obtained? What are the characteristics which render it impermeable? (page 56, Permit Application)

b The applicant should specify the velocity control measures to be utilized on the retention pond inlet areas.

c The Division understands the following to be true for the drainage control plan:

A 15 ac-ft capacity mine water retention pond will be constructed and operated for the treatment of runoff from the coarse ore stockpile, shaft construction muck drainage and an area northeast of the topsoil stockpile. The pond size is based on a maximum ground water flow of 560 gpm/day with an approximate six-day detention capacity. Tosco will grout off as much flow as possible depending on the success of such an effort. Water from the pond will be evaporated although there will be an emergency discharge spillway provided which safely passes the peak flow of the 100-year event. Although it is to be used as an evaporation pond

initially, at some point in the future, Tosco may begin reinjection of the water in the retention pond into the Bird's Nest Aquifer. A sediment pond will be constructed and operated for all other disturbed area runoff. If the chemical characteristics of the coarse ore runoff prove to be similar to natural surface flows, then such runoff will be routed through the sediment pond and discharged.

d Some concerns of the Division regarding the drainage control plan which should be addressed, include:

If reinjection of water from the retention pond is planned, can Tosco assure that the quality is not degraded by the muck drainage and coarse ore runoff prior to reinjection? What effect will the detention time have on the TSS quality of water to be reinjected?

6 M-3(2)(c)

a The topsoil storage area should be bermed rather than drained through surface ditches into the sediment pond to prevent excessive topsoil loss. The
b material which accumulates in the sediment pond should be analyzed to prove it does not adversely affect revegetation potential prior to mixing with the topsoil stockpile. Otherwise, it should be stored separately, as it is derived from heavy operational areas and may be contaminated with oil and grease. If it is so contaminated, how will the operator dispose of it? p57

7 M-3(1)(l)

It is unclear to the reviewer as to the total area to be disturbed within the permit area as the acreage provided for each facility mentioned does not total 39.1 acres. Will 26 acres be reclaimed or 39? Soil removal is proposed from 16 acres. A materials balance which includes the area to be disturbed, volume of soil removed and volume to be returned would clarify this situation.

8 M-3(1)(h)

The applicant should specify the location of the monitoring point "downstream and near the mouth of North Wash." Is it on North Wash or on the White River? p24

9 M-10

a The new two mile access road will be constructed and maintained for future access to leases. Why was soil removal not proposed for this road?

b It is stated on page 51 of the application that most of the 28,000 cubic yards of soil to be stored in a 2.1 acre area will come from two complexes. The applicant states in Section 3.1 that some CaC soil will be removed. How will Tosco decide on where and how much of this soil will be removed? What does an "exchangeable sodium content" of 15 for the CaC imply? Is this an ESP, SAR or percentage of CEC analysis? Initial indications lead the reviewer to believe this soil will be a hinderance to the establishment of vegetation or contaminate other stored soils. How will this material be stored? Similarly, some removal of the BS complex is proposed along the drainage channel. Will the volume removed be stored in the 2.1 acre area? Is there adequate storage room in the 2.1 acre area?

c Will topsoil be removed just prior to Phase IV in the coarse ore stockpile area? If so, how will storage and revegetation measures coincide with those of Phase I in order to minimize disturbance?

d The applicant has committed to establishing vegetation on the topsoil stockpile. Will temporary methods be employed in the interim to prevent erosion?

e Section 2.3.4 indicates the depth of the AkC and EkD complexes to be 20 and 12 inches, respectively. In Section 5.3.1, the applicant states that the depth of soils to be saved range between 2 and 12 inches. Please clarify.

10 M-3(2)(c)

How will grubbed vegetation be disposed of?

11 M-10(6)

Have the waste rock and muck materials been analyzed for toxicity to assure safety in surface disposal?

12 M-10(12)

a The revegetation species list in the MR 2 Form and Table 5.3-1 are not the same. Please clarify the discrepancies.

b The applicant gave two different mulching rates, please clarify. The application of straw often tends to decrease the nitrogen levels in soils. Has any effort been directed toward compensating such a loss? The hydroseeding rate provided was 30 lbs acre. Is this in Pure Live Seed (PLS)? The drilled rate should be about one half of this value.

c Tosco may want to propose test plots on the coarse ore stockpile or use data from the Colorado test plots to show revegetation potential.

13 M-3(2)(f)

A specific timetable for reclamation has not been included in the plan and should be included as a checklist against bond costs. p 39

14 M-10(2)(c)

Tosco should provide a commitment to the plugging of drill holes and final reclamation of monitor station areas.

15 M-10-12

In the MR 2 checklist, the applicant states that the coarse ore will be covered with suitable plant growth material and revegetated to achieve maximum stability (comment 38). However, in Section 5.2.1, no mention is made of covering the coarse ore prior to revegetation. Please clarify.

16 M-3(2)(c)

Applicant should further describe the measures to be incurred on those pads where waste rock and muck are utilized to assure longterm stability of the material.

STATE OF UTAH
NATURAL RESOURCES & ENERGY
Oil, Gas & Mining

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Cleon B. Feight, Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

June 8, 1982

Mr. John Hardaway
Manager, Regulatory Affairs
P.O. Box 441464
Aurora, Colorado 80014

RE: Sandwash Development
DOGM comments on Tosco
response
ACT/047/001

Dear John:

Thanks again for your ready availability in responding to OGM technical comments. As a result of our June 7, 1982 meeting many issues were resolved and others were consolidated.

Please find the enclosed listing of OGM's final comments. If any questions arise, please don't hesitate to contact the Division.

Sincerely,

THOMAS L. PORTLE
RECLAMATION SOILS SPECIALIST

Enclosure

cc: Sally Kefer, w/encl.
Susan Linner, w/encl.

TLP:dc

Board/Charles R Henderson, Chairman • John L. Bell • E Steele McIntyre • Edward T Beck
Robert R. Norman • Margaret R Bird • Herm Olsen

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Division comments on Tosco response
to Initial Review

| RULE | TOSCO # | COMMENTS |
|---|---|---|
| M-3(2) | 4 | If there will be different revegetation standards for different areas (i.e. vegetated or non-vegetated), these different areas should be shown on a map or correlated with the existing soils map. A discussion of the reclamation treatments that each area will receive should be submitted. A specific revegetation success standard for areas that will be seeded needs to be determined prior to any disturbance. |
| M-3(2) | 4,7,9a | Utilizing the available soils baseline data the applicant should address the following concerns:<br><br>1) The total area from which the best soils (EkD and AkC) were obtained should be arrived at. The applicant must be able to replace the soils in these areas. Please provide the volume of soil necessary to accomplish this. The Division understands that the company will guarantee that a minimum of 28,000 cubic yards will be stockpiled. Further, that site specific depth information generated along with site preparation will be translated to volume approximations. This method will account for any discrepancy between the minimum and actual volumes stockpiled. Additional soils may be generated from other soil types if the material is deemed worthy by a qualified person. Also, soils which are not used in fill embankments to enhance invasion of native species may be transported to the topsoil stockpile site. In line with this, soils which collect in the sediment pond(s) which we show not to be detrimental to revegetation success may be stockpiled or used in revegetation. It is understood that materials from any of these sites must be:<br><br>a) shown by chemical analysis to be compatible with the topsoil in the stockpile; or<br>b) stockpiled independently of the topsoil stockpile and utilized in marginal areas.<br><br>2) The applicant should utilize soil survey data to determine if this material should or should not be saved. If the option is left open, a separate stockpile should be provided in the vicinity of the proposed topsoil stockpile site to prevent disturbance to the site which will at this point have been in existence for up to 2 years. |
| M-3(2)(c) | 6a,6b,9d | It is necessary to protect the stored topsoil from wind and water erosion. The applicant has agreed to install a berm or employ some other means to control erosion resulting from runoff when it becomes apparent (from signs of rill or gully erosion) that a concern exists. This determination may be made by the applicant as a result of routine reconnaissance or as determined by Division personnel during on-site observation. |

| | | |
|---|---|---|
| | | The applicant will provide a more specific account of how the topsoil will be protected prior to the establishment of a successful cover of vegetation. Options discussed included mulching the stockpile. |
| M-10 | 9b | Tosco has yet to address the question of what "exchangeable sodium content of 15" which appears in the application on Page 19 means.<br><br>The applicant has proposed to solve this problem by providing the Division with SCS data generated in the proposed area of disturbance.<br><br>Tosco indicates that site specific soils determination regarding suitability for salvaging will be determined by a qualified professional. Please describe what criteria is considered to determine someone is a qualified professional and what criteria will be employed by this person to make these important determinations. |
| M-10(6) | | The Division and Tosco agreed that random samples (10) be taken in areas where waste rock and muck was utilized in pad construction. Initially samples would be tested for pH and electrial conductivity (EC). If these tests should indicate any problems more detailed analysis would be performed. The grading plan could be altered to isolate these materials should any condition be detected which may be detrimental to revegetation success. |
| M-10-12 | 12c | The Division must dutifully assume "worst case scenario" (one which requires reclamation). In light of this, test plots will be established attendant to the "staged revegetation" approach suggested by the applicant. This procedure may yield useful information concerning coarse ore reclamation. This approach will insure against a large-scale revegetation failure should reclamation be required. |